



Assessing stakeholder participation in coastal zone management: Methodological proposal and its application in a case study from Cádiz Bay, Andalusia (Spain)

Giovana Cioffi^{a,b,*}, Javier Garcia Sanabria^a, Davis Gruber Sansolo^b, Camila Pegorelli^a, Maria de Andrés^a

^a Research Group on Integrated Coastal Zone Management, University of Cádiz, Doctor Gomez Ulla Avenue, 11001, Cádiz, Spain

^b Research Group of Environmental Planning and Coastal Management, Bioscience Institute - São Paulo State University, Infante Dom Henrique Square, 11330-900, São Vicente, São Paulo, Brazil

ARTICLE INFO

Original content: [Research Data \(Original data\)](#)

Keywords:

Participation
Evaluation method
Coastal zone management
Protected areas

ABSTRACT

Stakeholder participation (SP) is widely acknowledged in the literature as a vital tool for improving coastal zone management (CZM) and facilitating conflict mediation, resource allocation, and program implementation. However, in Spain, as in other countries, participation in CZM faces significant challenges, including underrepresentation, limited stakeholder influence in decision-making, and various resource-related issues. Despite the robust theoretical framework established in the literature, practical methods for evaluating SP and overcoming these challenges are lacking, with most efforts focused on assessing processes rather than outcomes. This study addresses this gap by proposing a systematic assessment approach built on criteria and operational indicators capable of assessing stakeholder participation in CZM from the process to its outcomes. It also examines stakeholder participation in PAs and CZs of Cádiz Bay (Spain) through the application of this approach to identify which of these challenges are present in the region, highlighting areas for improvement. The approach was developed through a multistep process, including identifying participation components via a literature review, categorizing these components into each participation dimension (who, when, how, why), formulating criteria and indicators based on these components, consulting and validating with experts, and operationalizing the approach through an analysis matrix. Data collection involved reviewing official documents, minutes of participatory arenas, and stakeholder interviews. The approach comprises six criteria - representativeness, timing, promotion, accountability and clearness, influence, and effectiveness - providing a valuable tool for understanding the progression and outcomes of participatory processes. However, the findings also highlight the need for refinement to better capture the quality and significance of participation and to make it more applicable beyond scientific research contexts. The application of the approach in Cádiz Bay revealed challenges such as underrepresentation, limited influence, resource constraints, transparency issues, and effectiveness in fostering cooperation and trust. Participation also appears to be sectorized, reflecting the fragmented institutional framework in the CZM of Cádiz Bay.

1. Introduction

Stakeholder participation (SP) within environmental governance is widely recommended by the scientific literature and international agreements, such as the Aarhus Convention, Aichi Biodiversity Targets, 2030 Agenda and European Green Deal (UNECE - United Nations Economic Commission for Europe, 1998; European Commission, 2003; UNEP - United Nations Environment Programme, 2010; UN - United

Nations, 2015). Reflecting the global trend, Spain implemented the National Law on Public Participation in Environmental Matters (Law 27/2006) in 2006, recognizing participation in environmental matters as a right and mandating that public administration consider its outcomes. Building upon this law, CZM initiatives (or related to it) in the past two decades have taken steps toward widespread participation. The Conservation Guidelines of the Natura 2000 Network in Spain, the Law of Natural Heritage and Biodiversity (Law 42/2007), and the Law of

* Corresponding author.

E-mail address: giovana.cioffi@unesp.br (G. Cioffi).

<https://doi.org/10.1016/j.ocecoaman.2024.107214>

Received 12 January 2024; Received in revised form 5 June 2024; Accepted 6 June 2024

Available online 12 June 2024

0964-5691/© 2024 Elsevier Ltd. All rights reserved, including those for text and data mining, AI training, and similar technologies.

Marine Environments Protection (Law 41/2010) establish, for example, that the design and execution of management tools for protected areas (PAs) and conservation zones (CZs) must undergo participatory processes. Recently, approved measures such as the Spanish Network of Marine Protected Areas (MPAs) master plan (Royal Decree 1056/2022) and the plan for Marine Spatial Planning (Royal Decree 150/2023) are committed to developing strategies to promote long-term SP in marine governance. Through SP, these initiatives aim to achieve multisector horizontal management by fostering cooperation and enhancing the visibility of interests, activities, and uses.

In regard to coastal zone management (CZM), the need for participatory approaches arises from the complexity of coastal systems and the inability of governments to meet their challenges (Barragán Muñoz, 2014; Puente-Rodríguez, 2014). According to Barragán Muñoz (2014), this complexity stems from the status of the coastal zones of the most dynamic and transformed regions on Earth, which serve as transitional spaces between ecosystems, human activities, and jurisdictions. Therefore, SP is viewed as a tool for enhancing management capacity for mediating conflicts, regulating uses, allocating marine resources among stakeholders, and implementing programs (Olsen et al., 2009).

The concept of stakeholder participation does not have a single agreed-upon definition, but typically, it entails involving different sectors and societal groups in developing policies, plans, and projects to integrate a variety of needs, interests, and values (European Commission, 2003; Kasemir et al., 2003; Okazaki, 2008). The employment of “stakeholders” focuses on groups that have a specific relationship with a resource or system within a given area and therefore has a direct impact on or is affected by decisions regarding it (Grimble and Wellard, 1997; Mitchell et al., 1997; Luyet et al., 2012).

According to Jentoft et al.’s (2007) governability theory for marine protected areas (MPAs), stakeholders and their interrelations represent the social component, which, along with the natural component (marine ecosystems and resources), comprises the marine system intended to be governed by institutional arrangements and steering mechanisms (governing system). Since stakeholders are part of the system-to-be-governed and, therefore, drivers within it, the capacity of the governing system depends on its interaction with stakeholders. Therefore, the authors emphasize two main points: when interaction is not encouraged, the governing system becomes highly vulnerable because its success depends on legitimacy and support from the system-to-be-governed; achieving legitimacy requires recognizing legitimate stakeholders and establishing a two-way process where they engage with the governing system to both appreciate and take action on it.

Within CZM, governing systems encompass institutional arenas dedicated to facilitating this interaction with stakeholders. These include watershed management committees (Webler and Tuler, 2001), public hearings (Bawole, 2013; Seixas et al., 2019), environmental councils (Seixas et al., 2019), and managing boards of protected areas (PAs) or conservation zones (CZs) (Jentoft et al., 2007; Havard et al., 2015; Bockstael et al., 2016). However, the existence of these arenas does not guarantee the inclusion of stakeholders by itself (Bockstael et al., 2016). The scientific literature has revealed shortcomings that cause individuals to be skeptical about the effectiveness of participation. Bockstael et al. (2016) and Havard et al. (2015), in their studies on MPAs in Brazil and Mexico, respectively, highlight underrepresentation in the managing boards as one of the main shortcomings, which is related to the failure to consider legitimate stakeholders, particularly those from coastal communities. Keeping stakeholders out of the arenas can be seen as external exclusion, while the other form of exclusion is internal (Parkins and Mitchell, 2005) and more connected to the quality of the interaction. A common form of internal exclusion is the limited influence of stakeholders in decision-making processes. This can occur through elite capture of participatory arenas, as seen in Coastal Bangladesh water management (Dewan et al., 2014) and PAs in Norway and Sweden (Hovik et al., 2010), or can be tied to power centralization

by authorities, as observed in environmental licensing processes in Ghana (Bawole, 2013) and Pakistan (Nadeem and Fischer, 2011).

In addition to the previously mentioned issues, the lack of financial and human resources and time constraints have been identified as critical issues in CZM studies worldwide (Charnley and Engelbert, 2005; Buanes et al., 2005; Nadeem and Fischer, 2011; Dewan et al., 2014; Bockstael et al., 2016; Flannery et al., 2018). These issues directly influence the extent of stakeholder inclusion, as they determine the strategies employed (e.g., a public hearing is typically less costly than a council) and the time allocated for discussion and deliberation (Rowe and Frewer, 2000; Garmendia and Stagl, 2010; Ruiz-Villaverde and García-Rubio, 2017). The time required for stakeholders to participate can be substantial and may not align with their schedules as well, leading to conflicts, as observed by Bockstael et al. (2016) in the case of a fishing community in Brazil, where participation demands significantly reduced the time available for fishing. This can result in another challenge within participatory processes: the lack of stakeholder engagement, which also arises from inadequate communication, marked by no transparency, insufficient information, and linguistic barriers (Gilliland and Laffoley, 2008; Quesada-Silva et al., 2019; Seixas et al., 2019).

The scenario of participation in Spanish coastal management aligns with shortcomings reported worldwide. However, two key issues stand out in the literature: the lack of commitment from public administration to promote participation, often treating it merely as a formality, and the insufficiency or absence of human, material, and financial resources to facilitate participation (Barragán Muñoz, 2010; Ruiz-Villaverde and García-Rubio, 2017; Hervás-Gómez and Delgado-Ramos, 2019).

The challenges outlined above underscore the need to improve multiple aspects of stakeholder participation, which inevitably involves an assessment phase. The evaluation enables the initiation of a learning cycle to grasp how participation can progressively improve (Charnley and Engelbert, 2005; Carr et al., 2012). This is achieved by (a) informing administrators about participation performance and pinpointing aspects for modification (Chess, 2000; Carr et al., 2012); (b) recognizing the strengths and weaknesses of specific strategies (Carr et al., 2012); (c) showcasing its significance in enhancing environmental decisions or mitigating conflicts (Chess, 2000; Charnley and Engelbert, 2005); and (d) assessing the congruence between public policies regarding participation and practices for involved stakeholders (Charnley and Engelbert, 2005). We advocate for a fifth reason for evaluation: providing citizens with a means to monitor whether they are genuinely given opportunities to participate and whether their voices are being heard. From the perspective of integrated CZM, Barragán Muñoz (2014), referring to their Decalogue for the analysis of an integrated CZM, identifies participation as one of the ten aspects that must be systematically evaluated to assess the progress of management models. This points to the fundamental principle that integrated models are built upon the democratization of CZM, with participation being a core indicator of progress for that purpose (Barragán Muñoz, 2010; Areizaga et al., 2012). Additionally, Areizaga et al. (2012) emphasize examining the existing mechanisms and customs of CZM, and here, it is worth recapping that participation is an integral part of the governing system and facilitates the design of more sustained and realistic objectives for integrated models.

Although evaluating SP is widely acknowledged as crucial and extensive research into participation has established a robust theoretical framework for exploring it, there remains a gap in methods for translating these theories into practice (Laurian and Shaw, 2009; Carr et al., 2012; Areizaga et al., 2012; Quesada-Silva et al., 2019). The absence of practical methods represents not only a deficiency in the scientific literature but also indicates that participation programs and processes within public management are not being adequately supervised (Laurian and Shaw, 2009). The following section will present the existing assessment methods and identify their shortcomings.

1.1. Reviewing the existing methods for assessing stakeholder participation

Generally, the evaluation methods can be categorized into three groups (Carr et al., 2012): process evaluation, intermediary outcome evaluation, and resource management outcome evaluation. Process evaluation revolves around the central question of “how has participation been executed?”, primarily focusing on methodological and contextual aspects (Nadeem and Fischer, 2011). Assessing these aspects provides managers with feedback on ongoing participatory processes (Chess, 2000) but also enables an understanding of their public acceptance, once it concerns the procedures by which the citizens are involved (Rowe and Frewer, 2000; Webler and Tuler, 2001). Intermediary outcome evaluation seeks to answer “which second-order results have been reached?”. These outcomes concern relevant outputs such as cooperation agreements or conflict mitigation measures (Carr et al., 2012). To evaluate resource management outcomes, it is essential to address the following question: “what socioenvironmental enhancements have been achieved?” This final group poses a challenge for any method, as changes in socioenvironmental conditions often manifest over long timeframes, and it is difficult to trace the direct link between these changes and participation (Carr et al., 2012).

The bibliography offers a thorough array of elements regarding process, yet it provides limited aspects for comprehending outcomes. Additionally, the evaluation models examined employ different terminologies to identify participation components, including dimensions (Morf et al., 2019), criteria (Rowe and Frewer, 2000; Chess, 2000; Charnley and Engelbert, 2005), goals (Beierle, 1998; Laurian and Shaw, 2009; Oen et al., 2016), principles (Barragán Muñoz, 2014), and factors or attributes (Webler and Tuler, 2001; Kessler, 2003; Nadeem and Fischer, 2011). These models can also be structured using guiding questions (Petts and Leach, 2000; Barragán Muñoz, 2014). Oftentimes, the same component is approached in distinct terms and acts differently. For example, centering “access to information,” Rowe and Frewer (2000) see it as an indicator of the accessibility criterion, while Nadeem and Fischer (2011) and Oen et al. (2016) consider it a criterion indicated by clear language use and technical document availability. In contrast, Laurian and Shaw (2009) view “access to information” as a criterion for transparency.

Rowe and Frewer (2000) present nine criteria to assess process – representativeness, independence, early involvement, influence, transparency, resource accessibility, task definition, structured decision-making, and cost-effectiveness. This framework encourages the development and execution of participatory processes with a focus on maximizing involvement. Petts and Leach (2000) and Barragán Muñoz (2014) cover nearly identical criteria in their evaluation questions, with additional points such as whether the authenticity of participants’ ideas and proposals is being maintained and the existence of legal frameworks and mechanisms to ensure participation. Webler and Tuler (2001) also focus heavily on the process but make a significant contribution by ranking specific elements from their potential to truly indicate broader factors. For example, involving as many stakeholders as possible in all stages is highly indicative of the factor “a good process fosters fair democratic deliberation,” but it is weak in indicating “a good process emphasizes constructive dialog and education”. Beierle’s (1998) approach shifts the focus toward participation’s social goals, which proves more advantageous for assessing outcomes. The six social goals combine procedural and consequential aspects; for example, the goal “inform and educate the public” entails information and knowledge sharing and public awareness of environmental issues.

Laurian and Shaw (2009) and Nadeem and Fischer (2011) expand the interpretation of participation by delineating more precise attributes for what they term participation goals or major components, respectively. These attributes, due to their specificity, aid in tracking tangible aspects during an evaluation process. Morf et al. (2019) also make a significant contribution by proposing four dimensions of participation:

who, when, how, and why. These dimensions have served as theoretical aspects for guiding the design of methods, such as the stakeholder participation assessment framework (SPAF) for MSP developed by Quesada-Silva et al. (2019) and the one proposed by Areizaga et al. (2012). The SPAF explores the dimensions as operational criteria, suggesting codifications for each, thereby making it easier to visualize their application. For instance, under “who,” the SPAF proposes sectors (e.g., science and technology) and categories (e.g., academia) for classifying stakeholders who need to be engaged.

Among the methods revised, we identified that they are either purely theoretical (Chess, 2000; Rowe and Frewer, 2000; Caddy, 2005; Morf et al., 2019; Quesada-Silva et al., 2019) or empirical studies that fail to clearly outline the criteria for data analysis or provide sufficient details on how the criteria were identified in the study case (Webler and Tuler, 2001; Kessler, 2003; Buanes et al., 2005; Hovik et al., 2010; Dewan et al., 2014; Havard et al., 2015; Oen et al., 2016; Bockstael et al., 2016; Flannery et al., 2018). In addition, Carr et al. (2012) show that most studies are limited to analyzing the process, missing the view on outcomes. Some of them are also aspect-centered, e.g., evaluating citizens’ involvement based only on their perceptions (Charnley and Engelbert, 2005; Grilli et al., 2021) or assessing stakeholder influence in mangrove management by exclusively examining the dynamics of resource exploitation, such as users’ identity, interests, and power relations (Forkam et al., 2020). We also argue that they have been proposed without a systematic application and operational indicators of criteria (e.g., which factors indicate whether SP influences decision-making or reduces conflicts?), limiting their potential for replication.

These studies have set a considerable knowledge base essential for subject matter advancement. However, as expected in any method tackling such a complex subject as participation, they exhibit one or more gaps highlighted in the previous paragraph. Of all the shortcomings mentioned here, we intend to focus on two issues: the absence of indicators to concretely achieve the criteria and the deficiency in approaches made up of both process and outcome criteria. In this regard, the present study aims (a) to propose a systematic assessment approach built on criteria and operational indicators capable of assessing stakeholder participation in CZM from the process to its outcomes. When referring to outcomes, we are alluding to the interpretation from Carr et al. (2012) for intermediary outcomes, as previously mentioned. This study also aims (b) to examine the stakeholder participation employed in PAs and CZs of Cádiz Bay, Andalusia, Spain, through the application of the proposed approach.

2. Methodology

To address the problems mentioned before, this work utilized methods already developed as a basis for designing our approach rather than starting from scratch. The steps followed to structure our approach are detailed in section 2.1. To test the proposal, we chose the Cádiz Bay region, focusing on its protected areas and conservation zones, as a case study. The region is contextualized in section 2.2, while the data survey on participation in the study case is described in section 2.3.

2.1. Designing steps of the evaluation approach for stakeholder participation

The development of the approach proposed in this paper adhered to the steps depicted in Fig. 1.

The first step involved conducting a review to **identify the participation components** described in the scientific papers and books. Here, we use “component” as a term to generally refer to criteria, attributes, factors, etc. The search terms utilized were ‘stakeholder participation’ (or ‘public’), ‘evaluation’ (or ‘assessment’), ‘method’ (or ‘model,’ ‘framework,’ etc.), and ‘CZM’ (or ‘PAs,’ ‘MSP,’ etc.). To select the works to be examined, we utilized three filters: (a) review papers focused on evaluation methods, (b) research papers proposing model development,

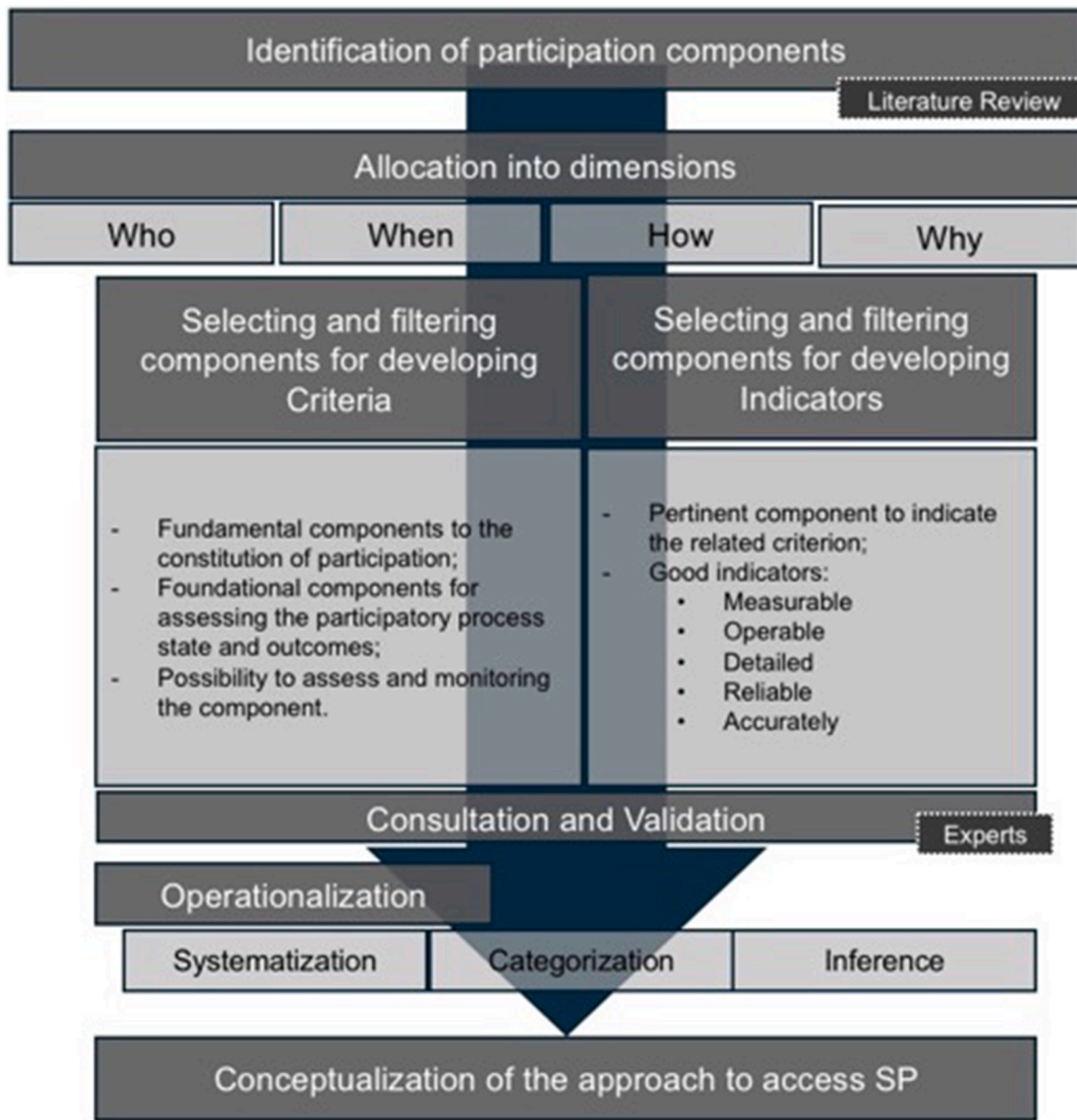


Fig. 1. Major methodological steps of the approach design.

and (c) research studies evaluating participation through case studies. We also referred to works on participation assessment that, while not specific to CZM, are critical theoretical foundations for this topic, such as Arnstein (1969), Chess (2000) and Rowe and Frewer (2000).

In the second step, the identified components were allocated into the four dimensions of participation discussed in the previous section: who, when, how, and why. This allocation was based on their potential to address these dimensions. The interpretation of each dimension is provided in Table 1. Focusing on these dimensions as the analysis guide facilitated the pivot of stakeholder participation from the process to its outcomes by recognizing their interdependence. According to the SPAF proposed by Quesada-Silva et al. (2019), the quality of stakeholder involvement relies on the alignment of the who, when, and how dimensions. This entails engaging the contextual diversity of stakeholders across as many MSP phases as possible through effective strategies and methods. If any dimension is weak, it adversely affects the overall quality. The articulation of who, when, and how also impacts the why dimension, as the logic dictates that a quality process generates quality outcomes. In this context, in the “why” dimension, the intended

Table 1
Description of the approach dimensions.

Dimension	Description
Who	It covers the society segments that should be engaged in CZM (Pomeroy and Douvere, 2008; Gilliland and Laffoley, 2008; Barragán Muñoz, 2014; Forkam et al., 2020)
When	It is about the momentum at which the participation is applied (Gilliland and Laffoley, 2008; Quesada-Silva et al., 2019)
How	It is a broader dimension since it also embraces “how much” (intensity of involvement) and “how often” (frequency of involvement) (Morf et al., 2019; Quesada-Silva et al., 2019)
Why	It encompasses the primary purposes of adopting participation and is crucial for measuring achievements (Beierle, 1998; Petts and Leach, 2000; Buanes et al., 2005)

objectives of promoting a participatory process were identified, thereby correlating their achievement or lack thereof with procedural aspects. Handling the why dimension from its potential to identify outcomes also allows for assessing whether participation has been regarded as an end

in itself (e.g., mere involvement suffices to validate a decision as participative) or as a means to achieve objectives, as it should be (Rowe and Frewer, 2000; Oen et al., 2016).

The third step entailed **component selection and terminology standardization**. As demonstrated in section 1.1, there is no standardized terminology for the components of participation, so we opted to compose our approach with criteria and indicators assuming the conceptualization proposed by Brand (1997), wherein criteria are the fundamental components expected to concretely set the subject matter, and indicators are their measurable features. **To develop the criteria**, we first selected the broader components and filtered them based on two guiding questions: 'Which components are fundamental to the constitution of participation?' and 'Does the developed criterion serve as a foundation for assessing the state of a participatory process and its outcomes?'. During this process, the components were either kept in their original form, combined, or eliminated to ensure a concise set of criteria that can be feasibly analyzed within a participatory process. For example, components such as transparency (Rowe and Frewer, 2000), information (Webler and Tuler, 2001) and public awareness about the participatory process (Laurian and Shaw, 2009) were combined into a single criterion; components such as the building of social capital and social learning were excluded due to their complexity (see Garmendia and Stagl, 2010), as measuring them solely through operational indicators within a participatory process would be arbitrary in our understanding. At the conclusion of this process, we obtained criteria for each dimension.

To develop the indicators, we relied on the required characteristics outlined for indicators (Carr et al., 2012), which include being measurable, operable, sufficiently detailed, consistent across time and space to enable their reproducibility, and pertinent in reflecting reality. To this end, we selected the more specific components and filtered them using the following questions: 'Is this component concretely traceable?' and 'Does this component serve as a potential indicator for any of the established criteria?'. During this process, the components were either kept in their original form, eliminated or altered to reflect positive participation scenarios described in the literature (e.g., participation should involve a mediator, but not just any mediator—a neutral one, so the indicator will encompass neutrality).

The fourth step, **consultation and validation**, aimed to enhance the accuracy of the approach, so we shared the draft of the approach with eight experts from different countries (Spain, Portugal, and Brazil), mostly by email, and requested their input on the following questions: 'Is the approach applicable and relevant to its intended purpose (assessing stakeholder participation)?', 'Are the criteria sufficient to encompass all dimensions of participation?' and 'Do the indicators effectively meet the criteria?'. The selection of these experts was based on recommendations from this research's advisors, who considered their qualifications and experience in the subject. The experts found the approach promising but suggested two major improvements: enhancing the clarity of the criteria for broader applicability and making the indicators more operational. To address this issue, we included detailed descriptions of the criteria and reviewed indicators to eliminate ambiguities (e.g., the effectiveness indicator was revised from "reduction of conflicts" to "reaching agreements among stakeholders to mitigate

conflicts"). The final approach is presented in the results section, as it is the result of objective (a).

In the final step, which was dedicated to operationalizing the approach, an analysis matrix (Fig. 2) was developed to systematically apply the criteria and indicators based on Bardin's (1977) content analysis subphases: systematization, categorization, and inference. The matrix comprises two parts. The first involves systematizing the collected data (see section 2.3) on participation in the assessment. The data from different sources were managed separately. Each column within this section represents a distinct systematization unit. For instance, interview data were categorized by the units 'sector', 'administrative level' (if applicable), and 'institution' to correlate stakeholder positions with criteria interpretation, while minute data were organized into 'topics' and 'outputs/outcomes' to trace, for example, whether a proposal was considered in the handling of a particular topic.

The second part is dedicated to categorization and inference. The columns within this section alternate between the criteria and their corresponding indicators. During data exploration, indicators were identified or not, constituting a data categorization process based on whether or not each criterion was covered by the content. When an indicator was spotted, the related criterion was marked in gray. For example, when a stakeholder proposal was adopted, which is an indicator of the influence criterion, the content was categorized as addressing this criterion. Notably, the same content may refer to multiple criteria. After categorization, inferences were drawn from the presence of indicators by identifying how the content met the criteria (we used green for positive relations and red for negative ones). Using the last example, it can be inferred that the content positively indicates the influence criterion, as a participatory process must consider stakeholder proposals.

2.2. Introducing the study area: PAs and CZs of Cádiz Bay

The focus of this work on the PAs and CZs in Cádiz Bay is explained by their well-defined boundaries, which are different from those of the entire subregion (Ruiz, 2011). To evaluate the approach, we required a more tractable case in terms of size and management configuration.

Cádiz Bay (Fig. 3) is a subregion of 688 km² located on the southwest coast of Spain, and it belongs to the administrative region Autonomous Community of Andalusia. Barragn Muñoz and de Andrés (2020) described this region as a socioecological mosaic with five systems—marine coastal, intertidal, agroforestry, mixed-use (residential and farming use), and urban-industrial systems. This work focuses on marine coastal and intertidal socioecological systems as systems to be governed by the PAs and CZs studied here. The region has two main protected zones—the Cádiz Bay Natural Park (CBNP - 105 km²) and the Special Area of Conservation (SAC) Seabed of Cádiz Bay (70 km²)—overlapping the intertidal (132 km²) and coastal water (230 km²) socioecological systems (SES) (de Andrés et al., 2018).

The intertidal system includes salt marshes and sandbanks, and its outer edge meets the coastal water system, which consists of fine sediments and seagrasses. The primary pressures on the ecology of these SESs are attributed to population growth, tourism, industrial development, port operations, shipping, and recreational fishing (de Andrés

Topics addressed	Outputs/Outcomes	Criteria and Related Indicators (R-I)											
		Criterion 1	R-I	Criterion 2	R-I	Criterion 3	R-I	Criterion 4	R-I	Criterion 5	R-I	Criterion 6	R-I
Topic 1			Identified indicator				Identified indicator		Identified indicator				
Topic 2			Identified indicator		Identified indicator				Identified indicator		Identified indicator		
Topic 3					Identified indicator		Identified indicator		Identified indicator				
Topic 4					Identified indicator		Identified indicator				Identified indicator		Identified indicator

Fig. 2. Structure and running of the analysis matrix for the approach application using systematization units, criteria and related indicators (R-I).

Table 2
Detailed composition of the approach.

Criteria	Dimension	Description	Proposed indicators	Based on
Representativeness	Who	Participation in CZM must involve representatives of all stakeholders, paying attention to underprivileged groups and society sectors to ensure the legitimacy of participatory processes. Representation from at least three groups is essential: (1) political and administrative authorities at various levels; (2) direct stakeholders, including resource users and direct beneficiaries (enterprises, NGOs, traditional groups, etc.); (3) indirect stakeholders (e.g., universities, NGOs operating at different scopes)	<ul style="list-style-type: none"> ● Presence of all representatives needed for fully subject coverage (it refers to a comprehensive composition of bodies ensuring their functionality in addressing issues) ● Perceived sufficiency of representation among stakeholders ● Balanced composition of participatory bodies across sectors, social groups and genders ● Presence of environmental conservation organizations ● Legal recommendation for the inclusion of women and local/traditional community representatives 	Rowe and Frewer (2000); Petts and Leach (2000); Petts and Leach, 2000; Rowe and Frewer (2005); Caddy (2005); Charnley and Engelbert (2005); Hovik et al., 2010; Carr et al. (2012); Dewan et al. (2014); Barragán Muñoz, 2014; Bockstael et al. (2016); Morf et al. (2019)
Timing	When	Early involvement of stakeholders in CZM processes is directly linked to their commitment and dedication to supporting management endeavors. Note that the concept of timing encompasses both temporal, key or hierarchical stages, which may not always adhere strictly to the prescribed sequence (for example, PAs that have been managed for years without having a management plan in place). The sequence of stages can vary based on the specific subject under consideration. The main phases of CZM are (1) issue identification and prioritization; (2) policy, plan or program preparation and adoption; (3) implementation; (4) monitoring and evaluation	<ul style="list-style-type: none"> ● Adoption of participation (opening processes for stakeholders through participatory tools or methods) in data collection; data evaluation; identifying constraints, opportunities, and threats (phase 1) ● Adoption of participation in vision and objectives definition; zoning; designing management plans and programs; other strategic decisions (resource allocation, authority definition, etc.) (phase 2) ● Adoption of participation in management tools designing and formalization; strategies and activities implementation; enforcement (phase 3) ● Adoption of participation in monitoring and surveillance evaluation of successes, failures, and learnings (phase 4) 	Rowe and Frewer (2000); European Commission, 2003; Thomas and Middleton (2003); Olsen et al. (2009); Reed, 2008
Promotion	How	In CZM, the responsibility for promoting participation usually lies with public administration. This criterion involves the efforts towards promoting comprehensive participation capable of handling significant social, educational, cultural, and economic diversity and inequalities. It is related to the participatory tools and methods adopted, as well as the costs of participation in terms of financial, human, material, and time resources	<ul style="list-style-type: none"> ● Perceived satisfaction with the promotion of participation among stakeholders ● Utilization of communication facilitation tools ● Utilization of diverse and adequate participatory methods and tools (e.g. social groups with limited internet access necessitate in-person tools for participation) ● Scheduling meetings, hearings, and other events at optimal times and locations for the majority of stakeholders ● Legal guarantee and regulation of participation ● Establishment or designation of official participatory bodies by legal means 	Beierle (1998); Rowe and Frewer (2000); Petts and Leach, 2000; Rowe and Frewer (2005); Reed, 2008; Pomeroy and Douvrou (2008); Nadeem and Fischer (2011); Carr et al. (2012); Barragán Muñoz, 2014; Oen et al. (2016); Quesada-Silva et al., 2019

(continued on next page)

Table 2 (continued)

Criteria	Dimension	Description	Proposed indicators	Based on
			<ul style="list-style-type: none"> ●Availability of official guidelines for participatory processes ●Allocation of public budget for participation ●Availability of human resources for participation (e.g. mediator) ●The mediator in the participatory process is a neutral agent ●Participation as a target, program, or line of action of plans and programs ●Holding meetings with sufficient frequency 	
Criteria	Dimension	Description	Proposed indicators	Based on
Accountability and Cleanness	How	Transparency regarding expected outcomes, decision-making structures, participant selection, process guidelines, financial aspects, and chosen methodologies should be ensured. Additionally, it needed to guarantee stakeholder access to pertinent information and technical details and, under specific circumstances, simplify complex content for better understanding	<ul style="list-style-type: none"> ●Perceived transparency among stakeholders ●Transparency as a legal requirement ●Definition of participation concept and objective ●Development of metrics for monitoring participation ●Clarification about priorities, decision-making framework, and procedures ●Feedback provision to stakeholders on their proposals and participation results ●Detailed documentation of participatory process ●Supplying crucial documents with consideration for easy access and advance ●Adoption of accessible language in technical documents and other materials relevant to the stakeholder awareness ●Account for budgets and expenditures ●Perceived real influence among stakeholders 	Beierle (1998); Rowe and Frewer (2000); Webler and Tuler (2001); Caddy (2005); Backstrand (2006); Pomeroy and Douvere (2008); Gilliland and Laffoley, 2008; Laurian and Shaw (2009); Nadeem and Fischer (2011); Bockstael et al. (2016); Oen et al. (2016)
Influence	How	The outcomes of stakeholder participation should be genuinely accepted and utilized as much as possible. This is a key factor to keep stakeholders engaged, once they perceive participation as a functional and meaningful process. The acceptance level of participation results depends on the degree of power sharing that the authority is willing to embrace	<ul style="list-style-type: none"> ●Establishment of deliberative participation ●Putting the agenda up for discussion (and not just inform) ●Balanced turn-taking of speech in the debate ●Collective agreements on participation rules and procedures ●Sharing of responsibilities between stakeholders and authority (e.g., stakeholders taking on roles in PA management) ●Decision-making by vote or consensus ●Participatory body/process as a competent entity to work through key PA issues (and not limited to addressing superficial topics) ●Incorporation of stakeholder matters in the PA agenda ●Integration of stakeholder inputs into final decisions (final plans, programs, reports, etc.) ●Acceptance of proposals not originating from the authority 	Beierle (1998); Rowe and Frewer (2000); Webler and Tuler (2001); Buanes et al. (2005); Pomeroy and Douvere (2008); Laurian and Shaw (2009); Nadeem and Fischer (2011); Luyet et al. (2012); Bawole (2013); Morf et al. (2019)

(continued on next page)

Table 2 (continued)

Criteria	Dimension	Description	Proposed indicators	Based on
Effectiveness	Why	This criterion covers both the overall goals of participation and the specific objectives each process aims to achieve. In general, participation should foster trust among stakeholders and authorities, encourage cooperation, raise awareness, and reduce conflicts. Regarding the specific goals of participation, they should be identified to facilitate the assessment of effectiveness. Focusing on outcomes in evaluation is central since participation is a means to specific ends, not an end in itself in CZM	<ul style="list-style-type: none">● Perceived trust building among stakeholders● Stakeholders' perceived raise in awareness regarding the significance of the PA● Cooperation between stakeholders and public authority to handle an issue● Monitoring and oversight of priorities, procedures, and other processes● Position towards the conservation of the PA ecosystems● Reaching agreements among stakeholders to mitigate conflicts	Beierle (1998); Rowe and Frewer (2000); Petts and Leach, 2000; Pomeroy and Douvere (2008); Reed, 2008; Nadeem and Fischer (2011); Carr et al. (2012); Quesada-Silva et al., 2019

et al., 2018; Barragán Muñoz and de Andrés, 2020). Over thousands of years, the wetland landscape of the intertidal system has reshaped due to salt extraction. This activity has significantly decreased (Regional Environment Department, 2022), and most of the salt lakes have been either abandoned or converted for aquaculture, which is now the main activity in this system, in addition to shellfishing. These salt lake structures have also become vital habitats for migratory bird species.

The CBNP was established in 1989, and its socioeconomic influence area includes five municipalities: Cádiz (capital), Puerto Real, San Fernando, Chiclana de la Frontera, and El Puerto de Santa Maria (de Andrés et al., 2018). Three smaller PAs (Fig. 3) overlap the park: the “Isla del Trocadero” Natural Site, the “Sancti Petri” Saltmarshes Natural Site, and the “Punta del Boquerón” Natural Monument. The management of these PAs is centralized under the CBNP. All these areas are the responsibility of the Regional Environment Department.

For these areas, there are two participatory bodies: the managing board (Junta Rectora in Spanish) of the CBNP, which also handles the other PAs, and the Provincial Council for the Environment and Biodiversity of Cádiz, which is responsible for the SAC Seabed of Cadiz Bay and all environmental matters in Cádiz Province.

2.3. Sources of information to evaluate participation in Cádiz Bay

Three sources were utilized in this part of the research, namely:

- **Official documents.** The analysis was conducted on all documents published between 1989 (as the starting point of the publishing of the Protected Areas Inventory of Andalusia - Law 2/1989) and 2022, which were laws related to the regulation of conservation strategies and participation rights, decrees for PAs and CZ creation and management tool establishment, and management plans;
- **Interviews with key stakeholders** of public administration (Environment Department and town hall representatives), science (University of Cádiz and Institute of Marine Sciences of Andalusia), business (entrepreneurs confederation, aquaculture, and salt exploitation), and society (ecologists and artisanal salt workers) were conducted. The interview script covered the following topics: stakeholders identifying and engaging, participation tools, gaps in participatory processes, conservation and stakeholder needs addressing, and trustworthiness building.
- **Minutes from participatory bodies** (supplied by the Environment Department) were examined. The CBNP minutes were collected only

from 2015 due to the Barragán Muñoz and Ruiz (2015) paper that extensively assessed the CBNP minutes published between 1999 and 2015. For the Provincial Council minutes, we reviewed all the minutes (from 2004 to 2022).

3. Major findings and discussion

3.1. Presenting the proposed evaluation approach and assessing it based on its application in the study area

The evaluation approach for stakeholder participation presented here consists of six criteria: representativeness, timing, promotion, accountability and clearness, influence, and effectiveness. Each of them is associated with a distinct dimension and can be achieved through the indicators. The structure and components of the approach are described in Table 2. Given our objective of addressing process and outcomes, our approach provides a frame of methodological and contextual aspects (Nadeem and Fischer, 2011) and products (Carr et al., 2012) of a participatory process. This frame is composed linearly as the approach is applied, allowing the suggestion of a cause-and-effect relationship between the process-based criteria and the effectiveness criterion. As previously stated, the approach was implemented at the study site, aiding in pinpointing issues for its further development.

The first criterion, representativeness (who dimension), sheds light on who represented within a participatory process and whether this representation aligns with the social composition of the system to be governed (see Table 2 for essential representatives). Identifying stakeholders marks an initial step in participatory processes (Rowe and Frewer, 2000; Morf et al., 2019; Quesada-Silva et al., 2019). The timing criterion (when dimension) aims to place the participatory process within the course of CZM, elucidating the temporal and hierarchical levels of involvement. This facilitates an understanding of whether stakeholders engage early in CZM and to what extent, whether it is normative, strategic, or operational (Flannery et al., 2018; Quesada-Silva et al., 2019). Fitting these levels with the CZM cycle perspective (refer to Table 2), the normative level entails activities such as vision definition and public policy design, while the strategic level involves decisions such as setting objectives for management tools (e.g., a PA) and allocating financial resources. Finally, the operational level encompasses tasks related to management implementation, such as designing management plans and monitoring. These two criteria provide a contextual perspective on participation, as who and when situate

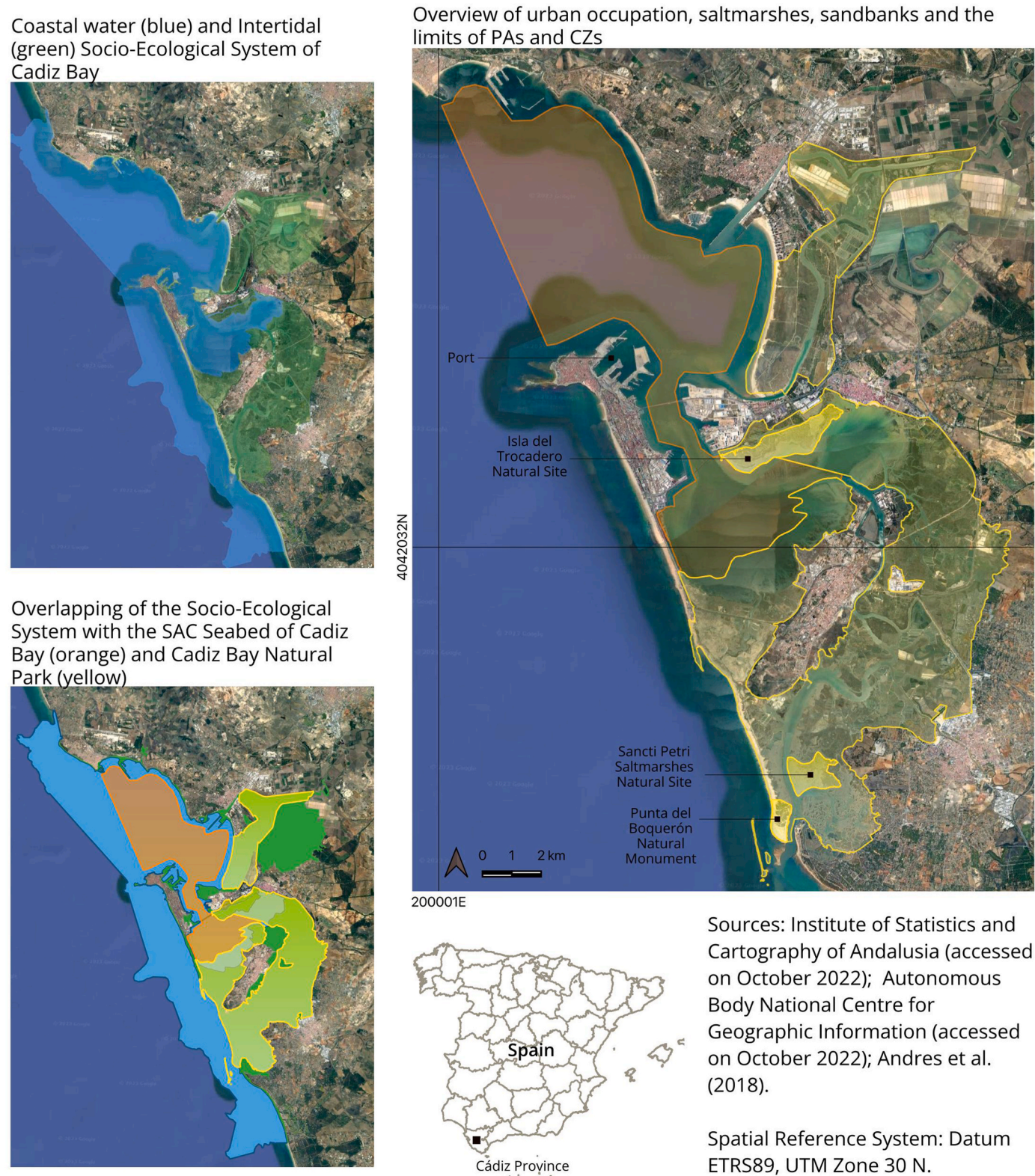


Fig. 3. Contextualization of Cádiz Bay and its protected zones.

it within the broader context of the coastal zone.

The criteria linked to the how dimension—promotion, accountability and clearness, and influence—provide an evaluation geared toward methodological aspects. However, they also encompass indicators of contextual aspects; for instance, “legal guarantee and regulation of participation” (found under the promotion criterion in Table 2) relates

to the legal framework upon which a participatory process is built. These criteria encompass the variations within how much (breadth of the stakeholder influence) and how often (frequency of involvement) (Morf et al., 2019). The promotion criterion covers a wide range of participation components found in other evaluation models, including the independence (neutral mediator indicator, see Table 2) and resource

accessibility criteria (Rowe and Frewer, 2000) and the ease principle (participation must be facilitated by the authority - Barragán Muñoz, 2014). The accountability and clearness criterion involves components such as transparency regarding priorities, decision-making and expenditures (Rowe and Frewer, 2000; Laurian and Shaw, 2009; Oen et al., 2016), as well as information provision (Beierle, 1998; Caddy, 2005). The influence criterion addresses highly valued elements in Webler and Tuler's (2001) method, such as influence over agenda-setting and final decisions. It also considers influence in rules and procedures to be an important aspect of the flexibility of participants (Rowe and Frewer, 2000).

The effectiveness criterion was formulated to target the first-hand outcomes. Under this criterion, the outcomes encompass the overarching primary goals of participation, as outlined by Carr et al. (2012), and the specific objectives of each participatory process (found in decrees regulating participation or management plans, for example). By mapping these outcomes, it becomes possible to ascertain whether a process has been effective in achieving them. Once identifying which objectives were achieved and which were not, it is possible to correlate them with other criteria to identify potential reasons for that. For instance, Areizaga et al. (2012), in their assessment of SP within CZM in the Cantabria Region (Spain), found that the process's success in building trust among stakeholders was hampered by a lack of transparency in decision-making. In their work on developing a strategy for managing the "Mar Menor" coastal lagoon in Murcia (Spain), Barragán Muñoz et al. (2020) demonstrated the dependence between establishing transparent and well-promoted participation and overcoming management barriers and achieving the objective of addressing existing conflicts and preventing future conflicts. In these examples, the authors correlate accountability and clearness and promotion with effectiveness.

Apart from correlations with effectiveness, applying the other criteria alone may also be inadequate for drawing meaningful conclusions. Considering the timing criteria, knowing that the CZM phase opened to stakeholders is insufficient; it is critical to understand the quality of this participation by combining timing with other factors. Table 3 shows possible criteria combinations for answering evaluation

questions proposed in the literature. Additionally, since the criteria can provide a primary understanding of participation, after their application and the identification of process flaws, alternative methods can be employed to address them. If, for example, the evaluator identifies underrepresentation and aims to map stakeholders within the coastal zone context, they may need to complement the approach with stakeholder analysis methods.

Most of these indicators are suitable for use from either a qualitative or quantitative perspective. The same indicator can be interpreted based on its presence/absence (qualitative, e.g., if stakeholders perceive transparency, how do they do it?) or by measuring its frequency of occurrence (quantitative, e.g., how many stakeholders perceive transparency?). They were designed to assess quality, implying an interpretation based on the literature regarding what constitutes a good and effective participatory process. In this regard, caution is necessary when interpreting these data to avoid misunderstanding the object under evaluation. According to the influence criterion (Table 2), even if the indicator "establishment of deliberative participation" correlates positively with a process, it cannot be conclusively inferred that stakeholders truly influence decisions, as this requires additional factors such as equitable dialog (may be reflected in the "balanced turn-taking of speech in the debate" indicator) (Gillgren et al., 2019) or achievement of agreements (Barragán Muñoz et al., 2020).

Considering the flaws of the indicators, the initial issue identified is the lack of a ranking according to their degree of relevance. While certain indicators are standard in all participatory processes (e.g., detailed records), others hold greater importance depending on the specificities of the process and participants involved (e.g., adapting language for indigenous communities in coastal zone management in developing countries, as discussed by Bockstael et al., 2016; Havard et al., 2015). In this sense, Webler and Tuler (2001) argue that stakeholders' interpretations of a successful process vary according to their principles or contexts. These varied viewpoints carry significant implications for participation planning, underscoring that ranking indicators with inputs from distinct sectors and groups would assist managers in determining which ones to address first. No ranking hindered the

Table 3
Potential combinations of criteria to address participation assessment guiding questions.

	Guiding questions					
	Representativeness	Timing	Promotion	Influence	Accountability and Clearness	Effectiveness
Did the process provide for an egalitarian environment for all the participants to express their concerns? (Nadeem and Fischer, 2011)	X		X	X	X	
Were stakeholders encouraged to participate in all CZM stages? (Barragán Muñoz, 2014; Collie et al., 2013 apud Quesada-Silva et al., 2019)		X	X			
Is the role and functioning of participation sufficiently provided for in legislation? (Barragán Muñoz, 2014; Barragán Muñoz and Ruiz, 2015)			X		X	
Is the participatory process well-organized from an administrative and economic perspective? (Barragán Muñoz, 2014)			X		X	
Did the active public feel that they had sufficient instruments and knowledge to contribute to deliberations and decision-making? (Beierle, 1998; Barragán Muñoz, 2014)			X		X	
Do the methods adopted provide the participants with sufficient opportunity to influence decisions? (Nadeem and Fischer, 2011)			X	X		
Did time and cost spent with stakeholder participation reflect wider support? (Quesada-Silva et al., 2019)			X			X
Did the participatory process ensure power balance among stakeholders? (Quesada-Silva et al., 2019)	X		X	X	X	
Did the participatory process balance both top-down and bottom-up approaches, resulting in shared decision-making? (Quesada-Silva et al., 2019)				X		X
Did the public feel that it had an impact on decisions? (Beierle, 1998)	X			X		
What degree of power-sharing is implied? (Barnes et al. apud Petts and Leach, 2000)		X		X		
Did stakeholder involvement improve or worsen cooperation among interested parties? (Beierle, 1998)			X	X		X
Did participation enable progress towards decisions about environmental problems? (Chess, 2000)				X		X

organization and presentation of findings based on the value of indicators for analyzing participation in Cádiz Bay. Instead, despite being interpreted qualitatively, they are chosen to be presented in section 3.2 according to their frequency of appearance in the analysis matrix. Another limitation of these indicators is their heavy focus on evaluating participation by centralizing the role of the responsible authority (e.g., is the public authority promoting participation or allowing stakeholders to influence?). This hinders the assessment of the stakeholders' commitment to participation and responding to guiding questions not pointed out in Table 3, such as 'Which sectors and stakeholders were actively engaged and integrated into the process?' (Ansong et al., 2017 apud Quesada-Silva et al., 2019).

In terms of the dimensions, we acknowledge the necessity of introducing a fifth dimension—the “what” dimension—which may encompass criteria such as meaningfulness and cohesiveness. This is because it lacks the means to assess the quality of content in the participation process, specifically whether discussions in the participatory arena are relevant to CZM aims. The studies reviewed do not clearly delineate this dimension or its possible criteria. However, some of them provide evidence that supports the need for such a dimension. Barragán Muñoz and Ruiz (2015) emphasize that grasping what participation is about is required to comprehend the extent to which the agenda reflects institutional, environmental, and social concerns. This enabled the authors to find that within the CBNP board, the most frequent discussions relate to the board's functioning, raising doubts about the relevance of participation in improving socioenvironmental decisions. Neglecting this dimension can also lead to stakeholder frustration, as indicated by Flannery et al.'s (2018) findings that participants in the US MSP process were disappointed with engaging in vague and nonspecific agendas instead of debating specific projects where gains and losses were at stake.

The analysis matrix (Fig. 2) shows the participation in two grades—existing/missing and positive/negative connections—which expands the range of results to work with. The categorization of criteria allows visualization of existing and missing links, facilitating further exploration of guiding questions such as “Is the role and functioning of participation sufficiently provided for in legislation?” (Table 3) by examining which criteria appear most in the legal framework relating to Cádiz Bay CZM. In the inference subphase, keeping the same example, it was possible to assess the connections by focusing on the adverb “sufficiently,” which indicates the quality of how the criteria have been addressed within this legal framework. In contrast, the matrix operation and reading may be complex to apply, particularly for uses beyond scientific purposes. The main expected challenge is a shortage of time and effort required for the extensive systematization and interpretation of data when applying the matrix.

The following section focuses on presenting and discussing the outcomes related to participation in the PAs and CZs of Cádiz Bay, gathered through the implementation of the approach.

3.2. Applying the approach in Cádiz Bay

The approach applied in Cádiz Bay yielded a comprehensive dataset; thus, in this section, we will present only the main results. In general, the data revealed a lack of participation within the SAC Seabed of Cádiz and symbolic participation within Cádiz Bay Natural Park, as shown in Fig. 4. First, we present the data by focusing on each criterion of analysis, and then we discuss how it correlates to the broader management of Cádiz Bay.

3.2.1. Examining stakeholder participation through the lens of each criterion

Representativeness. To present and discuss this criterion, we focused on the main identified indicators: (a) balanced composition of participatory bodies across sectors, social groups and genders, (b) perceived sufficiency of representation among stakeholders, and (c) the presence

of all representatives needed for full subject coverage.

The (a) indicator was negatively related to the CBNP managing board once the creation decree (Decree no. 239/1997) mandated 50% representation from the public administration, with the remaining percentages allocated to science (6.5%), business (6.5%), and civil society (30.5%), indicating the overrepresentation of the public administration. Barragán Muñoz and Ruiz (2015) noted that the predominance of the public sector is associated with the board's use for government coordination and the extension of institutional control. This observation aligns with stakeholder perceptions that the CBNP board structure tends to favor the public authority in decision-making to the detriment of the stakeholders' influence (Fig. 4). Additionally, the excessive presence of public administration was mentioned as a discouragement for other sectors. Flannery et al. (2018) indicate that this discouragement relates to the fact that dominance limits stakeholders' ability to truly engage in the planning and management process.

The (b) and (c) indicators also displayed negative correlations with CBNP. As shown in Fig. 4, stakeholders perceive underrepresentation, which was confirmed in the board legal composition. The vulnerable groups of shellfish catchers and artisanal salt workers are not represented, despite their significant struggle with the decline in ecosystem services (de Andrés et al., 2018), particularly in terms of reduced shellfish provision due to habitat loss and the socioeconomic instability resulting from their activity devaluation (Valle, 2023). Key economic representatives such as those from the port, real estate, and industry sectors are also missing on board, underscoring a management gap, as they are the primary drivers of change in land and marine use in Cádiz Bay in recent decades (de Andrés et al., 2018). Consequently, discussions either occur within the board without crucial stakeholders present to provide comprehensive coverage of the subject or occur outside the board, exclusively involving the public authority and the responsible party.

In the Provincial Council, the indicators also showed negative correlations. Civil society holds a 70% majority, but sea- and coast-related organizations have only one representation, sport fishing. This lack of representation is linked to stakeholders' perception of complete exclusion (Fig. 4). The CBNP board and the Council share only one member, the Andalusian Ecologists Association. According to Barragán Muñoz (2014), when selecting stakeholders, it is crucial to consider the influence zone for more effective participation. In this regard, various factors highlight the highly sensitive influence between SACs and CBNPs. Together, these areas form an ecological unit, interchanging sediment and water and serving as a transition space for species (Regional Environment Department, 2015). Therefore, failing to engage the same stakeholders represents a shortcoming in enhancing management through participation.

Timing. This criterion will primarily be discussed through the following indicators: (a) the adoption of participation in designing management plans and programs, (b) the adoption of participation in strategic decisions, and (c) the adoption of participation in monitoring and surveillance.

Indicators (a) and (c) showed positive correlations with regulations, as they foresee allowing participation in designing management plans and monitoring. This was confirmed in the context of CBNP (Fig. 4 – ongoing participation), where stakeholders were involved in revising or formulating plans from 2016 to 2022, such as the Master Plan for Use and Management (PRUG), the Natural Resource Management Plan (PORN), and the Sustainable Development Plan II. Strategic decisions, such as the choice of the Park's director or funding allocation, also involved the participatory board process (indicator b). Note that these phases are specifically linked to the management of the intertidal system (Fig. 3), excluding coastal waters.

Following the hierarchical levels perspective (Flannery et al., 2018; Quesada-Silva et al., 2019)—normative, strategic, and operational—we argue that participation in CBNP is restricted to the operational level. This limitation stems from a board dynamic that heavily focuses on

administrative operations aimed at how to achieve goals rather than determining what goals to pursue. However, even at the operational level, full participation is not achieved; for example, there is no indication of participation in implementation according to the data.

Regarding the SAC context, no indicators were detected, suggesting that phases were not open to participation (Fig. 4 – ongoing participation); therefore, participation in SACs is nonexistent (Fig. 4). Unlike the CBNP, which lacks documentation on its creation, the data related to the SAC indicated that it missed the opportunity to involve stakeholders from the outset. This may be a strong factor for the lack of stakeholder recognition of this CZ, considering that the literature emphasizes early involvement as one of the primary ways to stimulate a sense of identification and commitment among stakeholders (Rowe and Frewer, 2005; Gilliland and Laffoley, 2008). Furthermore, the lack of open phases for participation in SACs confirms the perception of not promoting participation (Fig. 4), a topic addressed in the following criterion.

Promotion. To assess this criterion, we focused on the following indicators: (a) legal guarantee and regulation of participation, (b) allocation of public budget for participation, (c) holding meetings with sufficient frequency, and (d) perceived satisfaction with the promotion of participation among stakeholders.

Participation is recognized as a citizen's right (indicator a) protected by overarching laws such as the Protected Areas Inventory of Andalusia (Law 2/1989) and the National Law on Public Participation in Environmental Matters (Law 27/2006). However, there are no financial resources available for participation by the CBNP board or the Provincial Council (indicator b). We suggest that this deficiency is indicative of the limited funding for coastal environmental protection in Spain (Barragán Muñoz, 2010) and the establishment of Spanish PAs and CZs without dedicated management funding (Santamarina Campos, 2019). Consequently, both the CBNP and SAC lack an independent budget, and the available resources for participation are directly allocated by the regional government through other initiatives without necessarily involving participatory bodies. Second, the adopted methods appear to be deficient (indicator c). The Provincial Council seems limited in addressing specific aspects of this CZ when meetings occur only once or twice a year and needs to handle issues for the entire province. The frequency of CBNP board meetings (twice a year) was also identified as insufficient for a comprehensive discussion of the park's issues. As indicated in Fig. 4, these shortcomings are correlated with the predominant stakeholder perception of lacking the promotion of participation (indicator d).

Beyond these challenges, some interviews suggested that promoting participation in these areas faces the challenge of a low-participation culture. While our data and analysis methods are not sufficient to assess this issue, Barragán Muñoz and Ruiz (2015) argue that if it exists, no significant measures have been adopted by the public administration to address it. The proactive action of public servants, including dialog with those who typically do not participate, fostering citizen organizations, expanding opportunities for participation, and others, is central to changing this culture (Bynner et al., 2023).

Accountability and Cleanness. The main indicators assessed for accountability and transparency criteria were (a) definition of the participation concept and objective, (b) clarification of priorities, the decision-making framework and procedures, (c) feedback provision to stakeholders on their proposals and participation results, and (d) detailed documentation of the participatory process.

Indicators (a) and (b) were not found to correlate with the SAC, whereas positive correlations were identified with the CBNP. In the CBNP, participation is legally structured mainly by the managing board's decree (Decree 239/1997), delineating objectives and procedures. This seems to be related to stakeholders' understanding of the CBNP board's function and their responsibilities as members, although this does not imply consensus, aligning with observations from numerous studies that clarity is a fundamental prerequisite for stakeholders to take over the purpose of participation (Beierle, 1998; Rowe

and Frewer, 2000; Nadeem and Fischer, 2011; Luyet et al., 2012). In this sense, we argue that the legal structure of participation ensures a concrete basis from which stakeholders can both advocate for its enforcement and disagree with what is established.

The provision of feedback to stakeholders (indicator c) is a legal requirement outlined in laws such as Andalusia's General Law on Public Participation (Law 7/2017) and the National Law on Public Participation in Environmental Matters (Law 27/2006). While a detailed analysis suggests that minor feedback is provided within the meetings' dynamics, nongovernmental stakeholders have reported not receiving feedback in significant processes such as the revisions of PORN and PRUG, leaving them uncertain about the incorporation of their contributions. Moreover, the meeting minutes lack information on parallel participatory processes (indicator d). This created a gap in the evaluation of discussions adjacent to the council (e.g., in working groups), preventing us from comparing proposed and accepted suggestions in the revision of management plans.

Influence. The criterion influence was identified mainly through the following indicators: (a) establishment of deliberative participation, (b) perceived real influence among stakeholders, (c) putting the agenda up for discussion, (d) integration of stakeholder inputs into final decisions, and (e) acceptance of proposals not originating from the authority.

In Spain and Andalusia, participation takes on a consultative nature (indicator a), where outcomes should be taken into account, but the ultimate decision-making authority remains with the public administration. This, coupled with the sensing that issues often reach the board with predetermined conclusions and are simply submitted for validation, contributes to the stakeholder perception of lacking genuine influence over the management of the CBNP (indicator b). Drawing on Arnstein's ladder of citizen participation (1969), we contend that the current level of participation in CBNP aligns with the symbolic degree (Fig. 4), characterized by stakeholders providing ongoing advice that is not legally binding. The degree of symbolism varies across hierarchical levels, with strategic decisions typically being informed, while operational decisions often involve debate (indicator c). This variation appears to be influenced by legal expectations regarding participation. Evidence of this can be seen in the management plan review process, where the legal requirement that these plans be approved by the CBNP board (Decree 239/1997) conditioned a more extensive debate, even incorporating negotiation aspects before final approval.

Indicators (d) and (e) also exhibited unfavorable interactions according to the data. Patterns of how stakeholder proposals face rejection were identified, a process that does not necessarily involve a clear 'no'. First, proposals are neither explicitly denied nor approved; instead, they are set aside. Another alternative is the delayed development of proposals, with two potential scenarios—the proposal is advanced due to the proponent's insistence, or it is forgotten in case of giving up. While voting was a less common procedure identified, when it occurred, it was usually followed by public sector counterarguments. Rejection often comes with justifications related to bureaucratic constraints or lack of competence. Notably, no public administration proposal has ever been voted down (Barragán Muñoz and Ruiz, 2015). These findings underscore the importance of considering both timing and influence criteria before determining the level of participation in a given decision. Here, we found a negative correlation between the phases opened for participation in CBNP management (timing) and their influence (Fig. 4).

Effectiveness. The effectiveness indicators identified were the following: (a) monitoring and oversight of priorities, procedures, and other processes, (b) position toward the conservation of the PA ecosystems, (c) cooperation between stakeholders and public authority to handle an issue, and (d) perceived trust building among stakeholders.

Indicators (a) and (b) match the Park's managing board objectives: monitoring compliance with norms and management plans and advocating for protected area values. Data analysis revealed that SP is more effective in overseeing administration (Fig. 4), which is often associated with PA defense. A few social control and value advocacy forms include

seeking clarification about the actions taken on socioenvironmental issues (e.g., alien species invasion and fish mortality in fish farming), the nonprioritization of the management plan (e.g., in favor of urbanization or investment plans), and the institutional procedures (e.g., salt lake management concessions). Corroborating findings from other studies on the importance of environmental conservation organizations' participation (Nadeem and Fischer, 2011; Carr et al., 2012), the representative of the Andalusian Ecologists Association has played a crucial role in achieving these objectives, showing domain over the legislation, priorities, and goals that must guide CBNP management. However, we argue that the achievement of these objectives is compromised by the underrepresentation of stakeholders, mainly regarding salt extraction. While the preservation of this activity is a core value of the CBNP (Regional Environment Department, 2022), the majority of salt lakes are abandoned (de Andrés et al., 2018), and the absence of salt worker representatives seems to contribute to the lack of advocacy within the board for actions to change this scenario.

Regarding the overarching goals of participation (Table 2), we observed a few cooperation initiatives (indicator c) aimed at addressing climate change impacts and sustainable aquaculture measures. Conversely, many opportunities to cooperate were missed in issues such as thefts in the park's area, effects of pests on economic activities, unregulated public use, or the development of environmental education initiatives. Another finding was the prevailing perception of a lack of trust-building in the participatory process (indicator d). We attribute these results to highly institutionalized participation in Cádiz Bay, where the public authority centralizes and drives stakeholder involvement, as observed by Barragán Muñoz and Ruiz (2015) and through criteria evaluation. This creates a nonfunctional environment for advancing toward participation goals for reasons such as achieving cooperation requiring more equitable power dynamics among actors (Arnstein, 1969; Okazaki, 2008; Hovik et al., 2010; Dewan et al., 2014), and, as observed in the timing and influence criteria, stakeholder power for contributing is low and limited to a few operational matters. Moreover, considering that fostering trust depends on transparency, mutual communication, and the genuine promotion of participation (Beierle, 1998; Nadeem and Fischer, 2011; Carr et al., 2012), the distrust resulting from the identified weaknesses in accountability and clearness, promotion, and influence criteria seems to be mainly about a feeling among stakeholders external to the public sector that they are not effectively integrated into management due to a lack of willingness of the public authority to share power.

3.2.2. Stakeholder participation in Cádiz Bay: contributions to CZM

Dialoging the challenges for participatory CZM reported by Seixas et al. (2019), the primary issue highlighted in the context of Cádiz Bay is the low quality of its legal structure. This is first related to the basal challenge of lacking legislation that directly shapes and fosters

participation in the coastal PAs and CZs of Cádiz Bay. This observation corroborates other studies on Spain's coastal and marine areas, such as that of García et al. (2021), who examined the Spanish framework for MSP and found that marine policy is vague and deficient in defining priorities for long-term marine space. Table 4 presents a general diagnosis of each criterion (except effectiveness) in the official documents, with a focus on the limitations in addressing participation within the context of CZM.

Seixas et al. (2019), through evaluating Brazil's CZM, identified measures for collaboration, including modern participatory arrangements, specific policies and programs for CZM engagement, and government willingness to review existing legislation. Therefore, the ongoing regulation of the study case is generic and outdated in terms of not addressing participation purposefully (e.g., management plans often mention participation as a program without clear formulation) and neglecting a systematic approach to the coastal zone. Wever et al. (2012) highlighted that a centralized and fragmented institutional framework is the first obstacle to achieving more integrated participatory CZM. Not addressing a systematic perspective of Cádiz Bay led to no interaction of participation in the management of intertidal and coastal water systems (Fig. 3), aligning with de Andrés et al.'s (2018) findings on the Cádiz Bay administration, which is highly sectoral and incoherent with ecosystem boundaries. The consideration of Cádiz Bay as a socioecological mosaic does not solve this problem entirely, but it helps to understand the territory holistically, laying the foundations for better collaboration, interadministrative cooperation, and inclusive participation (de Andrés et al., 2018).

Advocacy for integration in management and therefore in participation is grounded in the significant interplay between systems, as highlighted by de Andrés et al. (2018), who argue that the large-scale marine activities developed in the Cádiz Bay region are primary drivers of pressure on intertidal ecosystem services. This dynamic was reinforced during interviews, where salt worker respondents cited erosion by coastal waters as a major factor impacting salt lakes, necessitating constant maintenance that is not always financially feasible for everyone, and noted that coastal water quality critically determines the chemical composition of salt. The above situation is not exclusive to Cádiz Bay. Barragán Muñoz et al. (2020) highlighted the fragmented institutional framework in the "Mar Menor" without considering the whole socioecological system surrounding the coastal lagoon and explored the implementation of the tools already developed to achieve integration.

The expansion of the park's borders, potentially including the SAC area, was proposed in the PORN and PRUG revision as a potential avenue for integrating management. The proposal was rejected by means previously discussed in the influence criterion, which is tied to the third identified issue: the low participation of stakeholders in decision-making. However, while there are insufficient data to support

Table 4
Overview of each criterion on a legal basis from the CZM perspective.

Criterion	Overview
Representativeness	A commonly addressed criterion but lacks inclusivity for marginalized groups and overlooks the specificities of coastal and marine ecosystems' social uses. For instance, the creation decree of the CBNP managing board includes fishing organizations, but without differing among industrial, sport, traditional, or small-scale (fishing types that entail distinct power levels over resources and CZM, see Seixas et al., 2019 for example)
Timing	Criterion little addressed. CZM is not interpreted as a continuous and circular process (e.g., it required stakeholder involvement in creating and reviewing management plans, but this seems to occur once every fifteen/twenty years, so in which other steps should stakeholders be engaged?). It fails in foreseen participation in all the steps, particularly the initial ones
Promotion	This criterion is commonly addressed and ensures fundamental factors (right to participation, participatory bodies, guidelines, etc.). However, legal measures for coastal and marine PAs and CZs pay minimal attention to participation, resulting in deficient participatory tools to handle the complexity of coastal zones and a deficit of programs supporting stakeholder involvement, particularly for social groups (examples provided in Wever et al., 2012)
Accountability and Clearness	Instruments specifically tied to the coastal and marine PAs and CZs do not conceptualize participation. The objectives are limited to the operational aspects, such as approving plans and monitoring decisions. These factors contribute to the absence of a clear formulation of the expected impacts in the areas and CZM, making it challenging, for example, to comprehensively assess effectiveness
Influence	This criterion is hardly tackled by legal means. It is not detailed how extensive the actors' influence should be within CZM. This ambiguity hinders reducing common influence imbalances among resource users (e.g., due to wealth and power - see Buanes et al., 2005; Wever et al., 2012). A clear stipulation of how purposes should be managed or criteria for advancing or denying purposes would be helpful in this matter

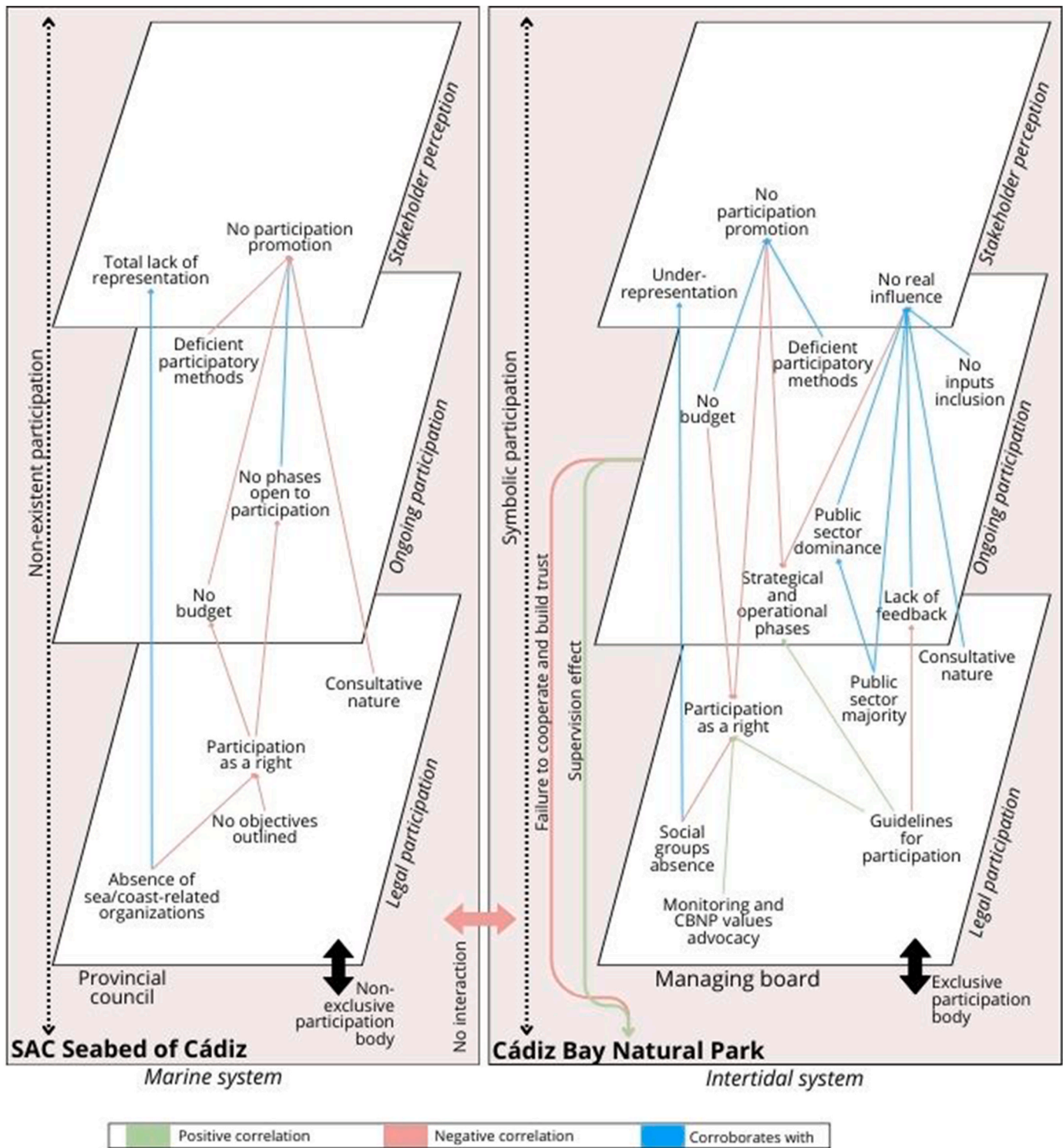


Fig. 4. Stakeholder participation in Cádiz Bay.

Park's expansion, we contend that combining participation in both SACs and CBNPs within the same body may enhance management coordination efficiency, contributing to a broader approach as a socioecological system. We further substantiate this argument by interpreting the allocation of the SP related to the SAC in the Provincial Council as a way out to the participation demand outlined in the Conservation Guidelines of the Natura 2000 Network in Spain, Andalusia's General Law on Public Participation (Law 7/2017) and the Law of Natural Heritage and Biodiversity (Law 42/2007). Barragán Muñoz (2010) observed this as a

common approach in Spanish CZM, adapting existing entities with other competencies to be participative instead of creating capable bodies for in-depth participatory coastal solution debates.

A fourth issue detected is the insufficient representativeness of the Park's managing board, which lacks the presence of critical economic sectors in the terrestrial part, such as industrial and real estate, which are only indirectly represented through the Confederation of Entrepreneurs of the province of Cadiz. Fig. 3 shows that the park is surrounded by urbanization, a major threat, as urban development has been the

main factor behind the 50% reduction in the Cádiz Bay salt marsh ecosystem over the past six decades (Ruiz, 2011; de Andrés et al., 2018). The board also fails to include vulnerable groups, a recurrent concern in CZM study cases (Havard et al., 2015; Bockstael et al., 2016; Seixas et al., 2019). These authors attributed this to low mobilization within these groups, as evidenced in interviews, particularly regarding shellfish catchers but also signaled that the social group's mobilization relies heavily on government and third-sector support to empower their organizations.

In addition to the challenges discussed here, our data suggest that symbolic participation in the PA and CZ of Cádiz Bay may indicate a passive approach within the overall management process. The low capacity of government managers is indeed a central constraint on enhancing their participation in CZM for reasons already debated in promotion criteria (Barragán Muñoz, 2010; Wever et al., 2012; Puent-Rodríguez, 2014; Seixas et al., 2019). However, we delve deeper, suggesting a connection between this limitation and the *modus operandi* of the government. Essentially, management tends to respond to symptoms rather than proactively dealing with the root causes, which means that the limited level of participation is a consequence of the government fulfilling minimum obligations without actively engaging in meaningful collaboration. Nevertheless, further research is needed to establish a definitive link between symbolic participation and passive CZM.

The previously identified challenges relate to inputs in the participatory process, ultimately shaping its output—effectiveness. Drawing from Backstrand's (2006) perspective, the initial effects of participation are closely linked to broader impacts. In our context, this translates to stakeholder democratization of CZM and a better capacity for environmental problem solving. While judging these impacts remains challenging, the author shows that achieving broader goals depends on addressing primary effects first. In the context of Cádiz Bay, we contend that there is a substantial gap in realizing the full potential of participation, with the evaluation of effectiveness revealing the absence of agreements or cooperation. Nevertheless, the fundamental input issues indicated here need to be resolved before significant advancements in effectiveness are expected.

4. Conclusion

The main conclusion drawn from this work is that the evaluation approach effectively addresses the concerned gaps—the lack of indicators to fulfill the assessment criteria and approaches that incorporate both process and outcomes—and captures the essence of stakeholder participation initiatives in coastal zone management (CZM). This capability stems from the detailed elaboration of each criterion, the use of diverse indicators incorporating aspects such as perception and legal considerations, and the implementation of the approach through the analysis matrix. Therefore, the approach serves as a tool to delineate both the institutional (how participation is designed) and practical (how participation is executed and what results are achieved) aspects of participation. The efficacy of the approach in evaluating stakeholder participation was ultimately confirmed through its application in the participatory arenas of Cádiz Bay Natural Park (CBNP) and the Special Area for Conservation (SAC) Seabed of Cádiz. This application provided us with a comprehensive understanding of the entire participatory process and its impact on the effectiveness of participation in managing these areas. Based on this, it was feasible to conclude that participation in CBNP is largely symbolic, with the managing board primarily serving as an administrative coordination body between the Regional Environment Department and town halls, and in SAC, participation is nonexistent (Fig. 4). These conclusions appear to stem from a lack of importance given to participation by the public administration, as evidenced by the findings obtained, including:

- **Representativeness:** The evaluation highlights the overrepresentation of the public administration and underrepresentation of key stakeholder groups such as shellfish catchers and artisanal salt workers. This imbalance limits the comprehensive coverage of subjects and undermines the effectiveness of stakeholder engagement. Numerous methods have been proposed in the literature to address this issue by thoroughly identifying stakeholders based on various criteria, such as interests, power of influence, level of affectedness by policies and ecosystem losses, and legitimacy (Quesada-Silva et al., 2019);
- **Timing:** The analysis reveals positive correlations between participation and specific phases of designing management plans and strategic decisions. However, participation is primarily restricted to the operational level. A lack of early involvement in decision-making processes, particularly in the case of the SAC, underscores missed opportunities for meaningful participation. As debated by Rowe and Frewer (2000), while there is no unanimous consensus in the literature regarding the optimal stage for public involvement, there appears to be a consensus that participation should begin as early as practically feasible. In this context, engaging stakeholders in highly technical decisions concerning the CBNP and SAC may not be advisable, but when value judgments become pivotal and it becomes necessary to consider the sociological impacts of these decisions, stakeholders should be included;
- **Promotion:** Deficiencies in financial resources and strategies for participation hinder the effective promotion of participation in CBNPs and SACs. Certainly, the absence of quality participation promotion results in meetings where stakeholders simply outline their activities instead of engaging in debates. This scenario often leads to stakeholder disillusionment, diminished confidence in the process, and reluctance among stakeholders to engage in future initiatives. Following the insights of Bynner et al. (2023) on local governance, transforming the current situation in Cádiz Bay relies on the proactive efforts of public servants within the Regional Environment Department to act as facilitators of stakeholder coordination and to update traditional engagement strategies. However, the authors also indicate that proactive public attitudes hinge on institutional changes to address challenges such as increased workloads, diminished capacity, budget constraints, and resource shortages;
- **Accountability and Clearness:** Despite the CBNP having established legal structures outlining participation objectives and procedures, transparency is compromised by deficiencies in providing feedback and documenting participatory processes. This uncertainty about how their inputs are being handled also contributes significantly to stakeholders' reluctance to engage in participation. Addressing this situation falls first within the responsibility of the management body for the CBNP and SAC, specifically the Regional Environment Department, as the extent to which transparency is upheld depends on how much importance the public authority places on ensuring stakeholders are informed about management procedures and decisions (Nadeem and Fischer, 2011);
- **Influence:** Participation in the CBNP is characterized by a consultative nature, where stakeholders' influence remains limited. Stakeholder proposals often face rejection or delay, highlighting challenges in achieving genuine influence over decision-making processes. Nevertheless, it was evident that having a legal framework specifying the degree to which stakeholders should influence decisions is crucial to support their engagement. Although such explicit details were lacking in the legal framework assessed here, indications supporting this conclusion were observed, such as the council's obligation to approve management plans, which prompted more debate within the board.
- **Effectiveness:** While stakeholders play a role in overseeing administration and advocating for protected area values, underrepresentation compromises the achievement of management objectives. Opportunities for cooperation on key issues are missed, and

perceptions of a lack of trust-building in the participatory process highlight the need for more equitable power dynamics and the genuine promotion of participation. Ensuring effective participation is also operationally crucial, as the public costs involved should be justified by the significance of the contribution it makes to addressing the issue at hand (Beierle, 1998; Rowe and Frewer, 2000). Therefore, enhancing participation effectiveness in CBNP is a cyclical process where demonstrating positive results with existing participation is vital for securing additional funding to enhance processes and ultimately achieve better outcomes.

The study also concludes that the participatory frameworks within the CBNP and the SAC reveal significant shortcomings in terms of integration and coherence stemming from a fragmented institutional framework. To address this fragmentation, one potential solution is to consolidate both participatory processes into a single arena. Based on Seixas et al. (2019), it can be inferred that integrating these processes would facilitate articulation among coastal and marine stakeholders, reduce potential inconsistencies between the management of intertidal and coastal water socioecological systems, and mitigate conflicting agendas. In a scenario where underrepresentation and fragmentation were addressed, stakeholders such as salt workers and port representatives would have the opportunity to engage in discussions within the same arena concerning, for instance, how the effects of port activity in coastal waters impact salt production in salt marshes. Nevertheless, integrating these processes would necessitate updating the legal framework and refining the board structure to effectively manage issues from both areas. Such efforts are likely to encounter resistance from the public administration, which, as noted by Seixas et al. (2019), tends to exhibit prevailing rigidity and be entrenched in intricate bureaucracies. This resistance is further exacerbated by previously mentioned issues such as increased workloads and lack of resources (Bynner et al., 2023).

Although the approach provides a comprehensive framework for assessing participation, it also has limitations when applied in Cádiz Bay. It evaluates participation mainly from the perspective of the responsible authority, potentially overlooking stakeholders' commitment and perspectives. Additionally, criteria for assessing the quality and meaning of what is being debated are lacking, which hampers a holistic understanding of participation dynamics. This weakened our analysis of the study case once questions such as "Is the content discussed within the board relevant to the goals of the CBNP?" and "Are the actors genuinely committed to meaningful participation in management?" has remained unanswered. It also prevented us from working through a common discourse among interviewees from public administration that suggests a low civic culture for participation, which negatively affects participatory process advancement in Cádiz Bay (see section 3.2.1). Moreover, the practical challenges posed by the complexity of the analysis matrix present significant obstacles in applying the approach. To address this complexity and enhance the usability of the approach, we propose a second revision involving CZM managers and related professionals. Following the Delphi method (Mukherjee et al., 2015), three consultation rounds are suggested. The initial round addresses criteria and indicator formulation, with a focus on identifying any missing elements. The second round involves ranking indicators by significance using a 5-point scale. The third round assesses the operational aspects' workability.

In addition to the identified issues, it is essential to emphasize that this approach was developed under the premise that the integration of CZM participation into all structures and processes maximizes the conservation of coastal and marine ecosystems. However, as highlighted by Carr et al. (2012), a considerable amount of literature advocating for this tends to emphasize its benefits, drawing from theoretical assumptions and researchers' qualitative findings and experiences. This inclination can introduce bias into studies, making it challenging to definitively demonstrate whether participation effectively leads to benefits in resource management. To mitigate potential bias, we

underscore the importance of applying the approach cautiously and interpreting the indicators rigorously while seeking validation through literature endorsement. If applied correctly, adapting it to the particularities of each context, it offers results that are highly relevant by identifying critical issues such as discrepancies between legislative expectations and actual implementation, as well as stakeholder perceptions that may hinder genuine engagement. Additionally, it offers insights into what constitutes good stakeholder participation, serving as a guide for enhancing it from an integrated and comprehensive approach in the analyzed coastal zone management. Therefore, we also conclude that the proposed approach is useful for managers and decision-makers seeking to improve governance in coastal zone management, facilitating the bridging of the existing gap between science and management.

Disclosure statement

No potential conflicts of interest were reported by the authors.

CRediT authorship contribution statement

Giovana Cioffi: Writing – review & editing, Writing – original draft, Validation, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Javier Garcia Sanabria:** Writing – review & editing, Validation, Supervision, Investigation, Data curation, Conceptualization. **Davis Gruber Sansolo:** Writing – review & editing, Supervision, Funding acquisition, Conceptualization. **Camila Pegorelli:** Writing – review & editing, Data curation. **Maria de Andrés:** Writing – review & editing, Validation, Supervision, Methodology, Investigation, Data curation, Conceptualization.

Declaration of generative AI and AI-assisted technologies in the writing process

ChatGPT-3.5 was used to enhance the vocabulary and readability of this work. The authors reviewed and edited the content as needed, taking full responsibility for the content of the publication.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Giovana Cioffi reports financial support was provided by Brazilian Coordination for the Improvement of Higher Education Personnel. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The research data is published on Mendeley Data [Research Data \(Original data\)](#) (Mendeley Data)

Acknowledgments

This work was financed by the Sandwich Doctorate Program No. 10/2022 of the Coordination for the Improvement of Higher Education Personnel (CAPES) from Brazil. The interviews with stakeholders were carried out within the MSP4Bio project of the European Union's Horizon Europe Research and Innovation program under Grant Agreement No 101060707.

References

- Areizaga, J., Sanò, M., Medina, R., Juanes, J., 2012. A methodological approach to evaluate progress and public participation in ICZM: the case of the Cantabria Region, Spain. *Ocean Coast Manag.* 59, 63–76. <https://doi.org/10.1016/j.ocecoaman.2011.12.007>.
- Arnstein, S.R., 1969. A ladder of citizen participation. *J. Am. Inst. Plan.* 35 (4), 216–224. <https://doi.org/10.1080/01944366908977225>.
- Backstrand, K., 2006. Democratizing global environmental governance? Stakeholder democracy after the world summit on sustainable development. *Eur. J. Int. Relat.* 12 (4), 467–498. <https://doi.org/10.1177/1354066106069321>.
- Bardin, L., 1977. *Análise de conteúdo* [Content Analysis], vol. 70. Edições, Lisboa, Portugal. Available on. https://edisciplinas.usp.br/pluginfile.php/7684991/mod_resource/content/1/BARDIN_L_1977_Analise_de_conteudo_Lisboa_edicoes_70_225.20191102-5693-11evk0e-with-cover-page-v2.pdf.
- Barragán Muñoz, J., 2010. Coastal management and public policy in Spain. *Ocean Coast Manag.* 53 (5–6), 209–217. <https://doi.org/10.1016/j.ocecoaman.2010.04.006>.
- Barragán Muñoz, J., 2014. *Política, Gestión y Litoral: Una Nueva Visión de la Gestión Integrada de Áreas Costero-Marinas*. Tébar, Madrid, Spain, p. 685.
- Barragán Muñoz, J., Ruiz, J.A.C., 2015. Participación ciudadana en la gobernanza de los espacios naturales protegidos de Andalucía: el caso del Parque Natural Bahía de Cádiz. *Geographica* (67), 1–27. https://doi.org/10.26754/ojs_geoph/geoph.2015671213.
- Barragán Muñoz, J., de Andrés, M., 2020. The management of the socioecological systems of the Bay of Cádiz: new public policies with old instruments? *Boletín de la Asociación de Geógrafos Españoles* 85. <https://doi.org/10.21138/bage.2866>.
- Barragán Muñoz, J.M., García Sanabria, J., de Andrés García, M., 2020. ICZM strategy for the socioecological system of the mar menor (Spain): methodological aspects and public participation. *Socioecological Studies in Natural Protected Areas: Linking Community Dev. Conserv. Mexico* 243–272. https://doi.org/10.1007/978-3-030-47264-1_13.
- Bawole, J.N., 2013. Public hearing or ‘hearing public’? An evaluation of the participation of local stakeholders in environmental impact assessment of Ghana’s Jubilee Oil Fields. *Environ. Manag.* 52, 385–397. <https://doi.org/10.1007/s00267-013-0086-9>.
- Beierle, T.C., 1998. Public participation in environmental decisions: an evaluation framework using social goals. *AgEcon Search*. <https://doi.org/10.22004/ag.econ.10497>.
- Bockstael, E., Bahia, N.C., Seixas, C.S., Berkes, F., 2016. Participation in protected area management planning in coastal Brazil. *Environ. Sci. Pol.* 60, 1–10. <https://doi.org/10.1016/j.envsci.2016.02.014>.
- Brand, D.G., 1997. Criteria and indicators for the conservation and sustainable management of forests: progress to date and future directions. *Biomass Bioenergy* 13 (4–5), 247–253. [https://doi.org/10.1016/S0961-9534\(97\)10012-5](https://doi.org/10.1016/S0961-9534(97)10012-5).
- Buanes, A., Jentoft, S., Maurstad, A., Sørensen, S.U., Karlsen, G.R., 2005. Stakeholder participation in Norwegian coastal zone planning. *Ocean Coast Manag.* 48 (9–10), 658–669. <https://doi.org/10.1016/j.ocecoaman.2005.05.005>.
- Bynner, C., Escobar, O., Weakley, S., 2023. Facilitators as culture change workers: advancing public participation and deliberation in local governance. *Local Govern. Stud.* 1–21. <https://doi.org/10.1080/03003930.2023.2190586>.
- Caddy, J., 2005. *Evaluating Public Participation in Policy Making*. Organization for Economic Co-operation and Development. Available on.
- Carr, G., Blöschl, G., Loucks, D.P., 2012. Evaluating participation in water resource management: a review. *Water Resour. Res.* 48 (11) <https://doi.org/10.1029/2011WR011662>.
- Charney, S., Engelbert, B., 2005. Evaluating public participation in environmental decision-making: EPA’s superfund community involvement program. *J. Environ. Manag.* 77 (3), 165–182. <https://doi.org/10.1016/j.jenvman.2005.04.002>.
- Chess, C., 2000. Evaluating environmental public participation: methodological questions. *J. Environ. Plann. Manag.* 43 (6), 769–784. <https://doi.org/10.1080/09640560020001674>.
- de Andrés, M., Barragán Muñoz, J., Sanabria, J.G., 2018. Ecosystem services and urban development in coastal Social-Ecological Systems: the Bay of Cádiz case study. *Ocean Coast Manag.* 154, 155–167. <https://doi.org/10.1016/j.ocecoaman.2018.01.011>.
- Dewan, C., Buisson, M.C., Mukherji, A., 2014. The imposition of participation? The case of participatory water management in coastal Bangladesh. *Water Altern. (WaA)* 7 (2). Available on. <https://www.water-alternatives.org/index.php/alldoc/articles/vol7/v7issue2/250-a7-2-4/file>.
- European Commission, 2003. *Public participation and the European water framework directive*. Role of information and communication tools. Work Package 3. Available on. https://www.harmoncop.uni-osnabrueck.de/_files/_down/HarmoniCOPinception.pdf.
- Flannery, W., Healy, N., Luna, M., 2018. Exclusion and nonparticipation in marine spatial planning. *Mar. Pol.* 88, 32–40. <https://doi.org/10.1016/j.marpol.2017.11.001>.
- Forkam, D.C., Ajonina, G.N., Ajonina, P.U., Tchamba, M.N., 2020. Framework for assessing the level of stakeholders involvement and governance in mangrove management: case of selected local communities in the south west coastal Atlantic Region, Cameroon. *J. Ecol. Nat. Environ.* 12 (4), 150–164. <https://doi.org/10.5897/JENE2020.0830>.
- García, P.Q., Sanabria, J.G., Ruiz, J.A.C., 2021. Marine renewable energy and maritime spatial planning in Spain: main challenges and recommendations. *Mar. Pol.* 127, 104444 <https://doi.org/10.1016/J.MARPOL.2021.104444>.
- Garmendia, E., Stagl, S., 2010. Public participation for sustainability and social learning: concepts and lessons from three case studies in Europe. *Ecol. Econ.* 69 (8), 1712–1722. <https://doi.org/10.1016/j.ecolecon.2010.03.027>.
- Gillgren, C., Støttrup, J.G., Schumacher, J., Dinesen, G.E., 2019. Working together: collaborative decision making for sustainable Integrated Coastal Management (ICM). *J. Coast Conserv.* 23, 959–968. <https://doi.org/10.1007/s11852-018-0631-z>.
- Gilliland, P.M., Laffoley, D., 2008. Key elements and steps in the process of developing ecosystem-based marine spatial planning. *Mar. Pol.* 32 (5), 787–796. <https://doi.org/10.1016/j.marpol.2008.03.022>.
- Grilli, N.D.M., Andrade, M.M.D., Xavier, L.Y., Santos, C.R., Stori, F.T., Carrilho, C.D., et al., 2021. Step by Step: a Participatory Action-Research Framework to Improve Social Participation in Coastal Systems, vol. 24. *Ambiente & Sociedade*. <https://doi.org/10.1590/1809-4422asoc20190255r1vu2021L1A0>.
- Grimble, R., Wellard, K., 1997. Stakeholder methodologies in natural resource management: a review of principles, contexts, experiences and opportunities. *Agric. Syst.* 55 (2), 173–193. [https://doi.org/10.1016/S0308-521X\(97\)00006-1](https://doi.org/10.1016/S0308-521X(97)00006-1).
- Havard, L., Brigand, L., Carino, M., 2015. Stakeholder participation in decision-making processes for marine and coastal protected areas: case studies of the southwestern Gulf of California, Mexico. *Ocean Coast Manag.* 116, 116–131. <https://doi.org/10.1016/j.ocecoaman.2015.06.017>.
- Hervás-Gómez, C., Delgado-Ramos, F., 2019. Critical review of the public participation process in drought management plans. The Guadalquivir river basin case in Spain. *Water Resour. Manag.* 33 (12), 4189–4200. <https://doi.org/10.1007/s11269-019-02354-0>.
- Hovik, S., Sandström, C., Zachrisson, A., 2010. Management of protected areas in Norway and Sweden: challenges in combining central governance and local participation. *J. Environ. Pol. Plann.* 12 (2), 159–177. <https://doi.org/10.1080/15239081003719219>.
- Jentoft, S., van Son, T.C., Björkan, M., 2007. Marine protected areas: a governance system analysis. *Hum. Ecol.* 35, 611–622. <https://doi.org/10.1007/s10745-007-9125-6>.
- Kasemir, B., Jaeger, C.C., Jäger, J., 2003. Citizen participation in sustainability assessments. In: Kasemir, B., Jaeger, C.C., Jäger, J., Gardner, M. (Eds.), *Public Participation in Sustainability Science: A Handbook*, pp. 3–36. Available on. <https://catdir.loc.gov/catdir/samples/cam034/2003273139.pdf>.
- Kessler, B.L., 2003. *An Evaluation Of Marine Protected Area Designation Processes In the United States: Understanding the Role of Stakeholder Involvement*. Doctoral dissertation, Graduate School–College of Charleston. Available on. <https://nsgl.gso.uri.edu/riuc/04001/pdf/papers/20387.pdf>.
- Laurian, L., Shaw, M.M., 2009. Evaluation of public participation: the practices of certified planners. *J. Plann. Educ. Res.* 28 (3), 293–309. <https://doi.org/10.1177/0739456X08326532>.
- Luyet, V., Schlaepfer, R., Parlange, M.B., Buttler, A., 2012. A framework to implement stakeholder participation in environmental projects. *J. Environ. Manag.* 111, 213–219. <https://doi.org/10.1016/j.jenvman.2012.06.026>.
- Mitchell, R.K., Agle, B.R., Wood, D.J., 1997. Toward a theory of stakeholder identification and salience: defining the principle of who and what truly counts. *Acad. Manag. Rev.* 22 (4), 853–886. <https://doi.org/10.2307/259247>.
- Morf, A., Kull, M., Piwowarczyk, J., Gee, K., 2019. Toward a ladder of marine/maritime spatial planning participation, 2019. In: Zauha, J., Gee, K. (Eds.), *Maritime Spatial Planning: Past, Present, Future*, pp. 219–243. Available on. <https://library.oapen.org/bitstream/handle/20.500.12657/22921/1007240.pdf?sequence=1#page=244>.
- Mukherjee, N., Enormous, J., Sutherland, W.J., McNeill, J., Van Opstal, M., Dahdouh-Guebas, F., Koedam, N., 2015. The Delphi technique in ecology and biological conservation: applications and guidelines. *Methods Ecol. Evol.* 6 (9), 1097–1109. <https://doi.org/10.1111/2041-210X.12387>.
- Nadeem, O., Fischer, T.B., 2011. An evaluation framework for effective public participation in EIA in Pakistan. *Environ. Impact Assess. Rev.* 31 (1), 36–47. <https://doi.org/10.1016/j.eiar.2010.01.003>.
- Oen, A.M., Bouma, G.M., Botelho, M., Pereira, P., Haeger-Eugensson, M., Conides, A., et al., 2016. Stakeholder involvement for management of the coastal zone. *Integrated Environ. Assess. Manag.* 12 (4), 701. <https://doi.org/10.1002/ieam.1783>.
- Olsen, S.B., Page, G., Ochoa, E., 2009. The Analysis of Governance Responses to Ecosystem Change: a Handbook for Assembling a Baseline. GKSS Research Centre, LOICZ International Project Office, Institute for Coastal Research. Available on. http://archive.iwlearn.net/loicz.org/imperia/md/content/loicz/print/rsreports/34_the_analysis_of_governance_responses_to_ecosystem_change.pdf.
- Okazaki, E., 2008. A community-based tourism model: its conception and use. *J. Sustain. Tourism* 16 (5), 511–529. <https://doi.org/10.1080/09669580802159594>.
- Parkins, J.R., Mitchell, R.E., 2005. Public Participation as Public Debate: A Deliberative Turn in Natural Resource Management. *Society & Natural Resources* 18 (6), 529–540. <https://doi.org/10.1080/08941920590947977>.
- Petts, J., Leach, B., 2000. *Evaluating Methods for Public Participation: Literature Review*. Environment Agency, Bristol. Available on. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=2e9df917de6abe4a0413c3ee4a14d1bfc1b7ac7>.
- Pomeroy, R., Douvère, F., 2008. The engagement of stakeholders in the marine spatial planning process. *Mar. Pol.* 32 (5), 816–822. <https://doi.org/10.1016/j.marpol.2008.03.017>.
- Puente-Rodríguez, D., 2014. The methodologies of empowerment? A systematic review of the deployment of participation in the coastal zone management literature. *Coast. Manag.* 42 (5), 426–446. <https://doi.org/10.1080/08920753.2014.942029>.
- Quesada-Silva, M., Iglesias-Campos, A., Turra, A., Suarez-de Vivero, J.L., 2019. Stakeholder Participation Assessment Framework (SPAFA): a theory-based strategy to plan and evaluate marine spatial planning participatory processes. *Mar. Pol.* 108, 103619 <https://doi.org/10.1016/j.marpol.2019.103619>.
- Regional Environment Department, 2015. Management Plan of Special Area of Conservation Fondos Marinos. Andalusia Government. Available on. <https://www.juntadeandalucia.es/medioambiente/portal/areas-tematicas/espacios-protegidos/>

- gestion-espacios-protegidos/porn-prug-planes-de-gestion/documentos-aprobados/zec-fondos-marinos-de-bahia-de-cadiz-es6120009.
- Regional Environment Department, 2022. Management Plan of Cádiz Bay Natural Park. Andalusia Government. Available on <chrome-extension://efaidnbmnnpbpcjpcglcdefindmkaj/https://www.juntadeandalucia.es/medioambiente/portal/documents/20151/57706054/2022_10_04 Decreto Litoral Cadiz B3.pdf/0a4e7430-14d3-7d0e-edda-b53dbd484997?t=1665122507958.
- Rowe, G., Frewer, L.J., 2000. Public participation methods: a framework for evaluation. *Sci. Technol. Hum. Val.* 25 (1), 3–29. <https://doi.org/10.1177/016224390002500101>.
- Rowe, G., Frewer, L.J., 2005. A typology of public engagement mechanisms. *Sci. Technol. Hum. Val.* 30 (2), 251–290. <https://doi.org/10.1177/0162243904271724>.
- Ruiz, J.A.C., 2011. *Aproximación a los paisajes de la Cádiz Bay*. El paisaje rural en Andalucía occidental durante los siglos bajomedievales: actas de las Primeras jornadas sobre paisajes rurales en época medieval. Cádiz: Servicio de Publicaciones Universidad de Cádiz 17–30. Available on. https://www.researchgate.net/profile/Juan-Chica-Ruiz-3/publication/272825625_Aproximacion_a_los_paisajes_de_la_Bahia_de_Cadiz/links/5ea31e9345851553faacb5d/Aproximacion-a-los-paisajes-de-la-Bahia-de-Cadiz.pdf?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19.
- Ruiz-Villaverde, A., García-Rubio, M.A., 2017. Public participation in European water management: from theory to practice. *Water Resour. Manag.* 31, 2479–2495. <https://doi.org/10.1007/s11269-016-1355-1>.
- Seixas, C.S., Davidson-Hunt, I., Kalikoski, D.C., Davy, B., Berkes, F., de Castro, F., et al., 2019. Collaborative coastal management in Brazil: advancements, challenges, and opportunities, 2019. In: Salas, S., Barragán Muñoz-Paladines, M.J., Chuenpagdee, R. (Eds.), *MARE Publication Series: Viability and Sustainability of Small-Scale Fisheries in Latin America and the Caribbean*, vol. 19, pp. 425–451. https://doi.org/10.1007/978-3-319-76078-0_18.
- Santamarina Campos, B., 2019. The beginnings of nature protection in Spain: origins and evaluation of conservation. *Rev. Espanola Invest. Sociol.* 168, 55–72. <https://doi.org/10.5477/cis/reis.168.55>.
- Thomas, L., Middleton, J., 2003. Guidelines for Management Planning of Protected Areas, vol. 10. IUCN, Gland, Switzerland. Available on. https://www.uciipfg.com/Repositorio/MGTS/MGTS11/U5/thomas_middleton_2003_guidelines.pdf.
- UN - United Nations, 2015. *Transforming our world: the 2030 agenda for sustainable development*. Available on. <https://sdgs.un.org/2030agenda>.
- UNECE - United Nations Economic Commission for Europe, 1998. Convention on access to information, public participation in decision-making and access to justice in environmental matters (Aarhus convention). Available on. https://environment.ec.europa.eu/law-and-governance/aarhus_en.
- UNEP - United Nations Environment Programme, 2010. Strategic Plan for Biodiversity 2011–2020, including Aichi Biodiversity Targets. Available on. <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-02-es.pdf>.
- Valle, L., 2023. Safeguarding intangible cultural heritage for sustainable development. The case of traditional salt activity. *J. Cult. Herit. Manag. Sustain Dev.* <https://doi.org/10.1108/JCHMSD-05-2022-0088>.
- Webler, T., Tuler, S., 2001. Public participation in watershed management planning: views on process from people in the field. *Hum. Ecol. Rev.* 29–39. Available on. <http://www.jstor.org/stable/24707126>.
- Wever, L., Glaser, M., Gorris, P., Ferrol-Schulte, D., 2012. Decentralization and participation in integrated coastal management: policy lessons from Brazil and Indonesia. *Ocean Coast Manag.* 66, 63–72. <https://doi.org/10.1016/j.ocecoaman.2012.05.001>.